In re Patent Application of:
CALDWELL
Serial No. **09/828,293**
Filed: **APRIL 6, 2001**
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In the Claims:

Claims 1-9, delete without prejudice.

Please add the following new claims.

10. A method of manufacturing an article comprising the steps of:

(a) providing a rigid outer female mold element having an interior surface associated with a first surface of said article;

(b) providing a rigid inner male mold element having an exterior surface associated with a second surface of said article, and being sized to be placed within an interior region of said outer female mold element, so as to define a mold assembly forming an unsealed mold cavity between said interior surface of said outer female mold element and said exterior surface of said inner male mold element, said inner male mold element having a perimeter sidewall that is adapted to extend a vertical distance alongside, but spaced apart from, a mutually facing interior sidewall of said outer female mold element when said inner male mold is inserted into said outer female mold, such that said inner mold element is not sealed against said outer female mold element;

(c) placing a structural preform within said interior region of said outer female mold element;

(d) introducing resin into said interior region of said female mold element and thereby wicking fibers of said structural preform and producing a resin-impregnated preform;

(e) inserting said inner male mold element within said interior region of said outer female mold element, so as to cause compression of said inner male mold element against said resin impregnated preform produced at said interior region of said female mold element in step (d), exclusive of the application of a vacuum that would draw said inner male mold element toward said female mold element, while spacing said inner male mold element apart from said outer female mold element by a prescribed spatial offset that forms geometry parameters of said unsealed mold cavity, as well as said generally continuous narrow annular channel that is contiguous with said unsealed mold cavity, through which air is vented and into which resin introduced in step (d) is allowed to expand from said mold cavity into said generally continuous narrow channel; and

(f) after curing of said resin, removing said mold assembly to produce a resin transfer molded article.

11. The method according to claim 10, wherein step (e) comprises spacing said inner male mold element apart from said outer female mold element by means of a plurality of indexing elements, which engage said inner male mold element and said outer female mold element, and provide said prescribed spatial offset that forms geometry parameters of said unsealed mold cavity between said inner male mold element and said outer female mold element.

12. The method according to claim 11, wherein step (e) comprises clamping said inner male mold element into a fixed

position within said interior region of said outer female mold element, so as to retain said inner male mold element in a mold cavity-forming position.

13. The method according to claim 10, further including the step of:

(g) removing a band of cured resin formed along an edge of said resin transfer molded article provided in step (e) as a result of resin outflow from said mold cavity into said channel.

14. The method according to claim 10, wherein step (e) further includes coupling an auxiliary closure with said mold assembly and applying thereto a vacuum that augments outflow through said channel of resin and removal of air pockets from said mold cavity, as said inner male mold element is inserted within said interior region of said outer female mold element and compressed against said resin impregnated preform produced at said interior region of said female mold element.

15. A method of manufacturing a resin transfer molded article comprising the steps of:

(a) providing a rigid outer female mold element having an interior surface associated with a first surface of said article;

(b) providing a rigid inner male mold element having an exterior surface associated with a second surface of said article, and being sized to be placed within an interior region of said outer female mold element, so as to define a

mold assembly forming an unsealed mold cavity between said interior surface of said outer female mold element and said exterior surface of said inner male mold element, said inner male mold element having a perimeter sidewall that is adapted to extend a vertical distance alongside, but spaced apart from, a mutually facing interior sidewall of said outer female mold element when said inner male mold is inserted into said outer female mold, such that said inner mold element is not sealed against said outer female mold element;

(c) placing a structural preform within said interior region of said outer female mold element;

(d) introducing resin into said interior region of said female mold element and thereby wicking fibers of said structural preform and producing a resin-impregnated preform;

(e) providing a plurality of indexing elements, which engage said inner male mold element and said outer female mold element, and provide a prescribed spatial offset that forms geometry parameters of an unsealed mold cavity between said inner male mold element and said outer female mold element;

(f) inserting said inner male mold element within said interior region of said outer female mold element, so as to cause compression of said inner male mold element against said resin impregnated preform produced at said interior region of said female mold element in step (d), exclusive of the application of a vacuum that would draw said inner male mold element toward said female mold element, while said indexing elements cause said inner male mold element to be spaced apart from said outer female mold element by said prescribed spatial offset that forms geometry parameters of said unsealed mold

cavity, as well as said generally continuous narrow annular channel that is contiguous with said unsealed mold cavity, through which air is vented and into which resin introduced in step (d) is allowed to expand from said mold cavity into said generally continuous narrow channel; and

(g) clamping said inner male mold element into a fixed position within said interior region of said outer female mold element, so as to retain said inner male mold element in a mold cavity-forming position,

(h) coupling an auxiliary closure with said mold assembly and applying thereto a vacuum that augments outflow through said channel of resin and removal of air pockets from said mold cavity, as said inner male mold element is inserted within said interior region of said outer female mold element and compressed against said resin impregnated preform produced at said interior region of said female mold element; and

(i) after curing said resin, removing said mold assembly and removing a band of cured resin formed along an edge of said resin transfer molded article as a result of resin outflow from said mold cavity into said channel to thereby form said resin transfer molded article.